

Coastal Plain of Los Angeles Groundwater Basin, Santa Monica Subbasin

- Groundwater Basin Number: 4-11.01
- County: Los Angeles
- Surface Area: 32,100 acres (50.2 square miles)

Basin Boundaries and Hydrology

The Santa Monica Subbasin underlies the northwestern part of the Coastal Plain of Los Angeles Groundwater Basin. It is bounded by impermeable rocks of the Santa Monica Mountains on the north and by the Ballona escarpment on the south. The subbasin extends from the Pacific Ocean on the west to the Inglewood fault on the east. Ballona Creek is the dominant hydrologic feature and drains surface waters to the Pacific Ocean.

Hydrogeologic Information

Water Bearing Formations

Holocene age alluvium forms much of the surficial deposits for the central part of the subbasin and fills the Ballona gap, an erosional channel cutting into and across the Inglewood fault. These deposits include the clay-rich Bellflower aquiclude and underlying gravels of the productive Ballona aquifer (DWR 1961). The Silverado aquifer within the San Pedro Formation is another main productive unit in the subbasin, with well yields ranging to 4,700 gal/min. Additional fresh-water bearing units lie below the San Pedro Formation, but are not widely produced (DWR 1961). Specific yield of the sediments in this subbasin ranges from 1 to 26 percent (DWR 1961). Groundwater in the Santa Monica Basin moves mainly southward toward the Ballona gap, then flows toward to the ocean (DWR 1961).

Principal hydrologic units present in the subbasin include (DWR 1961):

Aquifers/ Aquiclude	Age	Formation	Lithology	Maximum Thickness (feet)	Yield (gpm)
Bellflower	Holocene		Clay, sandy clay	40	
Ballona			Gravel, coarse sand	50	100- 800
	Upper Pleistocene	Lakewood Formation	Sand, clay and conglomerate	90	
Silverado	Lower Pleistocene	San Pedro Formation	Sandy gravel	280	4,700
	Pliocene	Pico Formation	Sand, silt, clay	100	

Restrictive Structures

The Inglewood fault, forms the eastern boundary of the subbasin and appears to restrict the movement of groundwater between the Baldwin Hills and about one-half mile south of Santa Monica Boulevard. The Overland Avenue fault in Ballona Gap also appears to restrict groundwater movement, because groundwater levels on the east side of the fault are much higher than

on the west side. The Charnock fault, which cuts the Silverado aquifer and displaces it by about 180 feet, appears to restrict only slightly groundwater movement in the subbasin (DWR 1961).

Recharge Areas

Replenishment of groundwater in the Santa Monica Basin is mainly by percolation of precipitation and surface runoff onto the subbasin from the Santa Monica Mountains. The Inglewood fault appears to inhibit replenishment by underflow from the Central Basin to the east, though some inflow may occur at its northern end (DWR 1961).

Groundwater Level Trends

Information not available.

Groundwater Storage

Groundwater Storage Capacity. Total storage capacity of the subbasin is estimated to be about 1,100,000 af (MW 2000).

Groundwater in Storage. Unknown.

Groundwater Budget (Type C)

Information is not available

Groundwater Quality

Characterization. Analyses of water from 7 public supply wells indicate an average TDS content of 916 mg/L and a range of 729 to 1,156 mg/L.

Impairments. Unknown.

Water Quality in Public Supply Wells

Constituent Group ¹	Number of wells sampled ²	Number of wells with a concentration above an MCL ³
Inorganics – Primary	13	0
Radiological	12	1
Nitrates	13	0
Pesticides	12	0
VOCs and SVOCs	12	9
Inorganics – Secondary	13	8

¹ A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).

² Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.

³ Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

Well Production characteristics

Well yields (gal/min)	
Municipal/Irrigation	Range: 4,700 gal/min
Total depths (ft)	
Domestic	
Municipal/Irrigation	

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
Department of Health Services and cooperators	Groundwater levels	NKD
	Miscellaneous water quality	NKD
	Title 22 water quality	12
NKD No known data		

Basin Management

Groundwater management:

Water agencies

Public

Private

References Cited

California Department of Water Resources (DWR). 1961. *Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County*. Bulletin No. 104.

Montgomery Watson (MW). 2000. *Groundwater and Surface Water in Southern California, A guide to Conjunctive Use*.

Additional References

California Department of Water Resources (DWR). 1962. *Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County*. Bulletin No. 104. Appendix B, Safe Yield Determinations.

Errata

Changes made to the basin description will be noted here.